UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,802	12/05/2001	Erik Y. Trell	11028-0002	2804

22902 7590 01/29/2009

CLARK & BRODY
1090 VERMONT AVENUE, NW
SUITE 250
WASHINGTON, DC 20005

EXAMINER	
PROCTOR, JASON SCOTT	
ART UNIT	PAPER NUMBER
2123	

MAIL DATE	DELIVERY MODE
01/29/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/001,802	TRELL, ERIK Y.	
	Examiner	Art Unit	
	JASON PROCTOR	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 11-14 were rejected in the Office Action entered on 17 December 2007.

A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 21 January 2009 has been entered.

The 21 January 2009 submission has amended claim 11. Claim 14 bears the status identified "Currently amended" although there are no apparent amendments to the claim language. Claims 11-14 are pending.

Claims 11-14 are rejected.

Response to Arguments – 35 USC § 101

1. Applicants submit no remarks to specifically address the 35 U.S.C. § 101 rejections. The amendments to the claims do not overcome the 35 U.S.C. § 101 rejections. These rejections are maintained.

Response to Arguments - 35 USC § 112

2. In response to the rejection of claim 14 under 35 U.S.C. § 112, Applicants argue primarily that:

> Holography is now a rather mature art, and there are many known techniques for forming and displaying holographic images. For example, see USPTO class 359, subclasses 1 *et seq.* The particular techniques used for making a hologram or displaying a holographic image are not important to the claimed invention, and it is again submitted that one of ordinary skill would be enabled by the present specification to make the holographic representation itself in accordance with the predicate inventive steps recited in claim 11 by any of several known techniques.

The Examiner respectfully traverses this argument as follows.

The arguments of counsel cannot take the place of evidence in the record. MPEP 2145.

It is the specification, not the knowledge of one skilled in the art, which must supply the novel aspects of an invention in order to constitute adequate enablement. It is unclear whether Applicants' intention is to admit that holographic representations of the type of model being claimed are well known in the art.

Further, Applicants have not merely claimed "making a hologram or displaying a holographic image," which may or may not be within the capability of a person of ordinary skill in the art. Instead, Applicants have claimed an inventive method of "constructing a model of the structures and properties of elementary particles" in a holographic medium. The scope of this claim language reaches far beyond merely making a single holographic image. The specification of this application does not provide adequate enabling disclosure to bridge the gap between making a simple holographic image and the full breadth of the claimed invention.

Applicants' arguments have been fully considered but have been found unpersuasive.

Response to Arguments – 35 USC § 103

3. In response to the rejection of claims 11-14 under 35 U.S.C. § 103, Applicants argue primarily that:

> It is submitted that there is no reason to combine the references to obtain the claimed invention. Applicant respectfully submits that the rejection over the art of record should be withdrawn because it would not have been obvious that the root vector diagram used for the skeletal reconstruction of exemplified baryons can

> be interconnected to a concrete global gauge vector lattice, over which the stated utility of the invention is to explore the further elementary particle states and properties, e.g. the mesons. This is not at all obvious, *inter alia*, because the outcome of the root vector lattice cannot be predicted by its isolated composition, which likewise is not obvious. Thus, the office action appears to take the position that it is obvious to make any model from known data, but this is not supported by the art of record, and there is nothing in the art of record to establish the obviousness of applying the recited method steps in the construction of a model, which has significant utility in the study of elementary particles.

The Examiner respectfully traverses this argument as follows.

The arguments of counsel cannot take the place of evidence in the record. MPEP 2145.

The previous rejection set forth motivation for combining the teachings of the references. Specifically, the previous rejection stated in relevant part:

> Accordingly, a skilled artisan tasked with realizing a method and apparatus for producing a model of an elementary particle, and having access to the teachings of Bogoliubov and applicants admitted prior art, would have knowingly modified the teachings of Boboliubov with the admitted prior art to realized the elements of the present invention as presently claimed. An obvious motivation exists since, as recognized in applicants admitted prior art, it has already been established that coset decomposition algebra can be projected in real geometry. (See: page 5, last paragraph, Kleppner and Jackow)
>
> Hence, a skilled artisan would have further known to modify the teachings of Boboliebov and AOA with the teachings of IRIS Explorer as a method of providing a visual representation of the elementary particle model using the same reasoning previously set forth above.

Applicants' arguments have been fully considered but have been found unpersuasive.

Information Disclosure Statement

4. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specifically, the specification makes reference to numerous publications throughout the specification (See: specification page. 8, "Jaffe (Nature, Vo. 268, p. 201, 1977", "(G. Rosner, Science, Vol. 290, 2000, p 2083)", for example) that have not been properly included in an IDS.

Claim Rejections - 35 USC § 101

The previous rejections under 35 U.S.C. § 101 of claims 11-14 are withdrawn in response to changes in Office policy concerning 35 U.S.C. § 101.

35 U.S.C. § 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 11-14 are rejected under 35 U.S.C. § 101 because the claimed invention is drawn to non-statutory subject matter.

5. Claims 11-14 recite a process that is neither (1) tied to another statutory class (a particular machine or apparatus) nor (2) transforms underlying subject matter (such as an article or materials) to a different state or thing. These claims are therefore rejected as non-statutory for failing to define a statutory process within the meaning of 35 U.S.C. § 101.

6. Additionally, claims 11-14 recite a process that covers an abstract idea, which is a 35 U.S.C. § 101 judicial exception. The claimed invention is not a practical application of a judicial exception because the invention does not (A) "transform" an article or physical object to a different state or thing; and it does not (B) otherwise produce a useful, concrete and tangible result. In particular, the claimed invention constructs a model in a "physical or figurative medium". A claim for "a model ... in a figurative medium" attempts to patent an intangible,

abstract idea. When a claim is subject to two interpretations ("physical or figurative medium") and one of those interpretations is nonstatutory ("figurative medium"), the claim is properly rejected as encompassing nonstatutory subject matter. Claims 11-14 are therefore nonstatutory for attempting to claim a 35 U.S.C. § 101 judicial exception to statutory subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 14 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The Examiner submits that there appears to be no support in the specification for creating the holographic representations recited in dependent claim 14. Accordingly, for purposes of art rejections the examiner has interpreted this feature to simply be a computer generated graphical representation as would have been well known in the art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Finite-size effects and infrared asymptotics of the correlation function in two dimensions", Bogoliubov et al, J. Phys. A: Math. Gen. 20, 1987, in view of applicants' own admission (AOA), and in further view of IRIS Explorer User's Guide" Release 5.0, The Numerical Algorithms Group, Ltd, 2000.

Regarding claims 11-14, Bogoliubov teaches a creating a model of elementary particles (Section 3, especially page 5365, paragraph 1) that includes ground states represented by filling a Fermi sphere (page 5363, paragraph 1).

Bogoliubov does not explicitly disclose the use of root space vectors and Lie algebra coset decomposition.

However, as admitted by applicants, and disclosed in the specification, the features relating to root space vectors and Lie algebra coset decomposition were well known in the art at the time of the invention. (See: page 5, last paragraph, page 6, paragraph 2 (Science, Rosner, Vol. 290, 200, p 2083), page 7, paragraphs 2-4, page 8, paragraphs 1-3 (Nature, Jaffe, Vol. 268, p 201, 1977), for example)

Accordingly, a skilled artisan tasked with realizing a method and apparatus for producing a model of an elementary particle, and having access to the teachings of Bogoliubov and applicants admitted prior art, would have knowingly modified the teachings of Boboliubov with the admitted prior art to realized the elements of the present invention as presently claimed. An obvious motivation exists since, as recognized in applicants admitted prior art, it has already

been established that coset decomposition algebra can be projected in real geometry. (See: page 5, last paragraph, Kleppner and Jackow)

Boboliebov and AOA do not explicitly disclose a creating graphical representation of the model of elementary particles. (e. g. representing the model of elementary particles in a figurative or physical medium)

IRIS Explorer discloses a commercially available software product capable of providing a visualization of (Section 1.6 to 1.6.2) of particle models (elementary, subatomic, etc.) generated by computer graphics. Hence, a skilled artisan would have further known to modify the teachings of Boboliebov and AOA with the teachings of IRIS Explorer as a method of providing a visual representation of the elementary particle model using the same reasoning previously set forth above. Here the examiner has interpreted a figurative or physical medium to be visual or graphical display of the elementary particles represented by the model.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of

an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jason Proctor/
Examiner
Art Unit 2123

jsp